Preliminary Close Out Report
Kim-Stan Landfill Superfund Site
Selma, Virginia

I. Introduction

This Preliminary Close Out Report documents that the U.S. Environmental Protection Agency (EPA) completed construction activities at the Kim-Stan Landfill Superfund Site (Site) in accordance with *Close Out Procedures for National Priorities List Sites* (OSWER Directive 9320.2-09A-P). EPA and the Virginia Department of Environmental Quality (VDEQ) conducted a pre-final inspection on June 17, 2009**,** and determined that the contractors have constructed the remedy in accordance with the remedial design (RD) plans and specifications, and no further response is anticipated. EPA and the VDEQ have initiated the activities necessary to achieve performance standards and Site completion.

II. Summary of Site Conditions

Background

The Site is a former municipal/industrial solid waste landfill located on approximately 24 acres in Selma, Virginia, a small town located west of Clifton Forge, Alleghany County, Virginia. The National Superfund database identification number for the Site is VA077923449.

The Site operated for nearly twenty years. An estimated 860,000 tons of wastes were placed on the landfill between November 1972 and May of 1990. Of this amount, 725,000 tons consisting of out of state refuse collected from primarily commercial sources was buried in the landfill during the last 18 months of operation at rates which approached 2,000 tons per day.

The original owners, Jack Kimberlain and H.R. Stancil, operated the landfill under permit No. 82 issued by the Virginia Department of Health. The Site was permitted to receive both municipal and industrial waste. In November of 1972, landfill operations began with the disposal of municipal garbage and household debris. Most of the accepted waste was from Alleghany County. Beginning in October 1978, the landfill accepted industrial waste on a limited basis.

In 1988, Shelcy Mullins Sr, Jerry W. Wharton, William Stover, and James Taylor purchased the landfill and continued to operate it as the Kim-Stan Landfill until May 1990. An estimated 725,000 tons of waste, which included large quantities of industrial waste, were received at the landfill between November 1988 and May 1990**.** By early 1990 the landfill had reached a height of 50 to 85 feet. The landfill

was shut down by court order on May 11, 1990, primarily due to outstanding operational problems.

EPA proposed the Site to the National Priorities List (NPL) on April 23, 1999, and added the Site to the NPL on July, 22 1999 (Volume 64, Number 140 DOCID: fr22jy99-15).

EPA conducted a Remedial Investigation (RI) of the Site and determined the following contaminants of concern were present in groundwater, channel sediments, floodplain sediments, surface water and leachate.

- Volatile Organic Compounds (primarily vinyl chloride)
- Inorganic elements (arsenic, iron, manganese and thallium)

These contaminants posed the greatest risk to human health through dermal contact and ingestion.

On September 27, 2002, the Director of the EPA Region III Hazardous Site Cleanup Division signed a Record of Decision (ROD) selecting the following remedy:

- Consolidation of landfill wastes visible at the surface outside the landfill property boundary into the landfill.
- Installation of a leachate collection system (trench and barrier wall) which shall prevent the migration of leachate from the landfill property and contain such leachate within the landfill property boundary in a manner that will allow for removal and treatment of the leachate at an off-site facility.
- Installation of piping and associated equipment to convey the leachate to the Low Moor Waste Water Treatment Plant (LMWWTP) for treatment.
- Performance of upgrades to the LMWWTP to facilitate adequate treatment of collected landfill leachate.
- Conveyance of collected landfill leachate to the LMWWTP and treatment of the leachate.
- Installation of a multi-layer cap atop the landfill that shall reduce, to the maximum extent practicable, the infiltration of water into the waste and the resulting production of leachate and groundwater contamination.
- Routine monitoring of groundwater to document progress in meeting the groundwater performance standards and to determine the need for continued limits on groundwater use.

- Implementation of institutional controls to protect the integrity of the multi-layer cover, leachate collection system and other remedy components on the Site property, and to prevent the use of contaminated groundwater until the performance standards are achieved.

EPA Established the following Remedial Action Objectives (RAOs):

- Prevent direct contact with and migration of the landfill waste,
- Mitigate production and uncontrolled release of landfill gases;
- Mitigate production and uncontrolled release of leachate; and
- Restore groundwater quality through source control.

Health based performance standards specified in the ROD are confined to groundwater use. For each contaminant of concern, the cleanup level is the more stringent of the following standards:

- Non-zero Federal Maximum Contaminant Level Goals (MCLGs)
- Federal Maximum Contaminant Levels (MCLs)
- State MCLs, and
- Existing groundwater standards promulgated by the Commonwealth of Virginia.

Remedial Construction Activities

In response to and in compliance with the 2002 ROD, the following remedial construction activities took place at the Site:

Phase I and Phase II
On December 2, 2002 EPA processed a work assignment to Tetra Tech; the Remedial Action Contractor (RAC) to develop a work plan for the Remedial Design (RD). The RAC completed the RD on September 18, 2003.

EPA awarded a Remedial Action (RA) contract on September 28, 2004. EPA and the VDEQ conducted the remedial activities as planned in three phases. The first and second phases commenced on December 5, 2005 and included:

- **Upgrades to the LMWMTP to increase capacity by 250,000 gallons**. The original capacity of the LMWWTP was 500,000 gallons. The expected leachate flow would have exceeded the capacity of the plant. EPA

constructed an additional 250,000 gallon reactor tank to allow the plant to handle the additional capacity.

- **Construction of a dedicated leachate pipeline to convey leachate to the LMWWTP**. The pipeline consists of a two inch line that is approximately 2.5 miles in length. It is used solely for leachate conveyance and does not tie into any of the existing sewage networks in the Low Moor area. The line runs from the landfill to a pump station; from the pump station it runs directly to the LMWWTP via gravity feed.

Phase III

The first and second phases were completed in September, 2006. EPA remobilized on-site to implement the third phase on May 13, 2008. Work performed under this phase consisted of:

- **Leachate collection trench**. EPA constructed an approximately 1,400 foot long trench, to a depth of 35 feet below the ground surface. The trench intercepts leachate, preventing it from leaving the Site. The leachate is then pumped into a series of wetlands ponds that allow iron and other metals to settle out and remain on Site before finally being conveyed to the LMWWTP.

- **Multi-layer landfill cap construction**. The landfill was constructed utilizing a 12 inch base layer of fill material, a geosynthetic liner, an additional 18 inches of fill material sources from a local borrow site and a final 6 inches of topsoil. It had been hydroseeded and approximately 1,500 trees have been planted on the Site. The contouring and plantings on the Site are designed to blend the Site into the surrounding George Washington National Forest.

- **Installation of groundwater monitoring wells**. EPA extended 5 of the existing groundwater wells present on the landfill and added 2 additional wells on the down flow side of the leachate collection trench to ensure that the leachate collection trench is functioning as designed.

Remaining activities to be completed by the EPA contractor include periodic adjustments to the constructed remedy to maintain optimum performance as well as demobilization of on-site facilities no longer required to conduct the remedial action. The adjustment to the constructed RA consists mainly of ensuring the adequate flow of leachate is reaching the LMWWTP.

Remaining activities for the US EPA include establishment of Institutional Controls to prevent potable use of the groundwater, drilling of new potable water wells in the vicinity of the plume, and disturbance of the cap. The Institutional Control placements have been complicated by the bankruptcy status of the Site and the difficulty in finding the current owners. The owners are known, but their whereabouts have not been established to date. EPA is currently investigating

whether the controls can be put in place via a Groundwater Management Zone instead of utilizing a deed restriction.

No activities using removal authority were conducted at this Site.

The local community is exploring potential use of the Site as an Environmental Education Center but as of this date, no funds have been identified for this activity.

III. Demonstration of Cleanup Activity Quality Assurance and Quality Control

EPA and the State reviewed the remedial action contract and construction for compliance with quality assurance and quality control (QA/QC) protocols. Construction activities at the site were determined to be consistent with the ROD, RD plans and specifications, and the RA plan.

The EPA RACs construction contractor adhered to the approved construction quality control plan (CQCP). The construction quality assurance plan (CQAP) incorporated all EPA and State requirements. All confirmatory inspections, independent testing, audits, and evaluations of materials and workmanship were performed in accordance with the construction drawings, technical specification and CQAP. The EPA RPM and State regulators visited the site approximately once per month during construction activities to review construction progress and evaluate and review the results of QA/QC activities. Deviations or non-adherence to QA/QC protocols, drawings, or specifications were properly documented and resolved.

The Quality Assurance Project Plan (QAPP) incorporated all EPA and State QA/QC procedures and protocol. EPA analytical methods were used for all confirmation and monitoring samples during RA activities. Sampling of soil, sediments, and water followed the EPA protocol *Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods*. EPA and the State determined that analytical results are accurate to the degree necessary to assure satisfactory execution of the RA.

IV. Activities and schedule for Site Completion

The Kim-Stan landfill has been plagued with excessive rainfall in the Spring/Summer of 2009. A number of activities will have to wait until water levels in the groundwater drop approximately 10 feet. These activities are minor and do not effect the protectiveness of the remedy. They primarily consists of electrical work that will allow the landfill leachate to be monitored and adjusted remotely. To give an idea of the scope of remaining activities, the RACs contractor estimates that 99.4% of all activities have been completed. The following activities will be completed according to the following schedule:

Task	Estimated Completion	Responsible Party
Complete surface punch list items (see Attachment 1)	7/30/2009	Tetra Tech NUS, Inc.
Complete Final Inspection	9//24/2009	Tetra Tech NUS, Inc. U.S. EPA VADEQ
Determine Remedy Operational and Functional	9/24/2009	U.S. EPA VADEQ
Approve Interim Remedial Action Report	9/30/2009	U.S. EPA VADEQ
Five-Year review	12/5/2010	EPA
Approve Final Remedial Action Report	12/30/2019	EPA VADEQ
Approve Final Close Out Report	3/30/2019	EPA
Delete Site from the National Priorities List	9/30/2019	EPA

V. Summary of Remediation Costs

The September 2002 Record of Decision for the Site included a cost estimate for the Remedial Action ("RA") in the amount of $7,345,000. This amount was based on estimates calculated during the Feasability Study ("FS"). In August of 2003, the Remedial Design was completed and included a RA estimate of $10,578,000., which was an increase of $3,233,000. The cost increase was primarily due to the following elements:

Landfill Element

- The FS cost estimate did not include a provision for the pretreatment of leachate. (RD estimate - $360,000)

- The FS did not include an estimate for innovative vegetation design. (RD estimate, additional $234,000)

- Leachate collection trench size was underestimated. (RD estimate, additional $775,000)

- FS underestimated the costs of cap installation. (RD estimate, additional $678,000)

- FS did not include leachate dewatering or utility relocations. (RD estimate $313,500)

Leachate pipeline and LMWWTP cost estimates were increased by $546,000 due to various factors related to the size, complexity or the choice of controls and telemetry systems.

Shortly before EPA began the Remedial Action in 2007, the estimated cost was revised once again during work assignment negotiations. The total cost of the RA was revised to $11,503,209.

During the actual construction EPA has realized a significant cost savings as a result of a change order utilizing a local borrow source for landfill fill material. As of this writing EPA estimates they have realized a cost savings of $500,000. This brings EPA's estimated cost for completing the Kim-Stan Landfill remedial Action to $11,003,209.

VI. Five Year review

Hazardous substances will remain at the Site above levels that allow for unlimited use and unrestricted exposure after the completion of the remedial action. Pursuant to CERCLA section 121(c) and as provided in the current guidance on Five Year Reviews (*Comprehensive Five-Year Review Guidance, EPA 540-R-01-007)* issued in June 2001, EPA must conduct statutory Five Year Reviews. The first Five Year Review Report will be completed prior to December 5, 2010, five years after RA onsite mobilization.

VII. Approval

Approved By:

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Kathryn A. Hodgkiss, Acting Director Date
Hazardous Site Cleanup Division

ATTACHMENT 1 – PUNCH LIST ITEMS

June 17, 2009
Field Work Items Only
KIM STAN LANDFILL SUBSTANTIAL COMPLETION SITE INSPECTION/PUNCH LIST DEVELOPMENT

Inspection Attendees
Tetra Tech NUS, Inc.: Ralph Boedeker, Rick Thomas, Tad Yancheski
USEPA: Anthony Iacobone
DEQ: Thomas Modena, Kevin Green
Sevenson: Ira Rogers

Item
No. Description
1 Remove topsoil from over the geotextile fabric at cap toe drains and diversion berm toe drains.
2 General site clean-up (tires, construction debris, trash, etc.).
3 Repair damaged silt fence, including silt fence at catch basin along Siebels property.
4 Seed disturbed areas on CSX property.
5 Remove topsoil within W1 spill way area.
6 Complete topsoil and seeding.
7 Seed along topsoil edges at engineered wetland ponds and aeration channel.
8 Seed deficient areas, where needed.
9 Complete landscape tree and shrub plantings (to be completed in early Fall 2009).
10 Split-rail fence
11 Repair erosion rills on east side (need to wait until topsoil dries)
12 Placement of silt fence around 3 catch basins, adjacent to SWM Pond
13 Plug stormwater management pond outlets, until establishment of grass cover.
14 Placement of gravel to and around monitoring wells on CSX property.
15 Excavate bleeder drain in MW-04 area to prevent ponding of stormwater.
16 Engineered wetland pond plantings (schedule for plantings currently being determined).

The following can not be performed until leachate levels have dropped in the leachate collection
trench approximately 10 feet

A Change out of existing valve vault with new concrete vault (change order work).
B Valve vault associated forcemain/LCT pipe tie-ins, valves, and meters
C Pump installations and associated work at the LCT manhole
D Electrical/PLC work, panel installation and wiring for new pumps
E Installation of Overflows OF-01 and OF-02 (requires trench penetrations).
F Installation of LCT manhole piping to oversight overflow piping (requires trench penetration)
G Placement of GCL in LCT pump station yard

H Place geotextile fabric and gravel in pump station yard
I Topsoil/seeding touch-up
J Start-up Testing
K Final site general clean-up and restoration
L Final Demobilization